

Claims

We claim:

5 1. A method for handling resources of a multiprocessor system, comprising the steps of:

a requestor group of one or more processors of the system allocating a resource of a target group of one or more processors of the system, the target being interconnected to the requestor, the resource being associated with a request of the requestor;

the requestor sending a result of the request to the target; and

10 the target directly receiving the result by using the resource without intermediate handling of the resource by the target.

15 2. The method of claim 1, wherein the requestor and the target are interconnected by a central hardware device; and

wherein the step of allocating the resource comprises:

the requestor sending a request to the central hardware device; and

the central hardware device allocating the resource at the target group.

20 3. The method of claim 2, further comprising the central hardware device assigning an identifier to the request.

4. The method of claim 1, further including the step of the target deallocating the resource.

25 5. The method of claim 1, wherein the resource controls access to a portion of a shared system memory of the target..

6. The method of claim 1, wherein the request is associated with a transaction between the requestor and the target.

5 7. The method of claim 6, wherein the resource is a transaction identifier of the transaction.

10 8. The method of claim 1, wherein the target comprises a first group and a second group of the processors, the first and second groups being interconnected.

15 9. A computing system, comprising:
a requestor group of one or more processors;
a resource allocator responsive to requests of the requestor; and
a target group of one or more processors, the target being interconnected to the requestor and responsive to a resource provided by the resource allocator and to a result of the request from the requestor;
wherein the target directly receives the result responsive to the resource without intermediate handling of the resource by the target.

20 10. The system of claim 9, further comprising a central hardware device interconnected between the requestor and the target; and
wherein the central hardware device comprises the resource allocator.

25 11. The system of claim 10, wherein the resource allocator comprises one or more pipelines for handling requests.

12. The system of claim 10, wherein the central hardware device comprises a crossbar

interconnecting the requestor and the target.

5 13. The system of claim 12, wherein the central hardware device comprises a first crossbar for data interconnection and a second crossbar for control interconnection.

10 14. The system of claim 13, wherein the second crossbar is a tag and address crossbar.

15 15. The system of claim 9, wherein the requestor and the target are interconnected directly to each other.

20 16. The system of claim 9, wherein the resource controls allocation of a portion of shared system memory of the target.

25 17. The system of claim 9, wherein the resource is a transaction identifier.

30 18. The system of claim 9, wherein the target group of processors comprises interconnected first and second groups of processors.

35 19. The system of claim 18, further comprising a central hardware device interconnecting the requestor and the first and second groups of processors.

40 20. In a multiprocessor computer system comprising a plurality of processing nodes; a shared, distributed system memory; and a central hardware device comprising a communication pathway connecting said processing nodes; wherein each one of said processing nodes includes at least one processor; and a portion of said shared system memory coupled to said processor and said communication pathway; said communications pathway comprised of communications ports each

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dedicated to communicating with one of said processing nodes wherein said communications pathway is further comprised of a tag and address crossbar to communicate tag and address information, and a data crossbar means to communicate data within the system;

5 a method for handling tagging and addressing within the system comprising the steps of:
a first node communicating to said tag and address crossbar a request for a transaction
in the system;

10 allocating a transaction identifier in the tag and address crossbar for use by the identified
transaction;

15 conveying said transaction identifier to the originating node;
attaching said transaction identifier to the said transaction;
communicating said transaction from the first node to the node which receives the
transaction directly through said data crossbar means.

21. The method of claim 20, wherein the step of conveying said transaction identifier to the
originating node is accomplished by conveying said identifier from said tag and address crossbar to said
first node.

22. In a multiprocessor computer system capable of being partitioned into one or more
20 independently functioning processing systems comprising:

25 a plurality of processing nodes, each node capable of operating independently; a shared,
distributed system memory; and a communications pathway which interconnects said plurality
of processing nodes;

wherein each one of said processing nodes includes at least one processor and a
portion of said shared system memory coupled to said processor and said communication
pathway, and said communication pathway is comprised of a central hardware device including
tag and address means to communicate the identification of data transactions being processed

through the system connected to said plurality of processing nodes, said tag and address means including means to store information related to the identification of data including the target location for said data; and means to define to which memory location in one or more of said nodes said data should be sent;

5 a method for handling a request from a requestor node of the system to a target node of the system comprising the steps of:

the requestor node sending a request to the central hardware device;

the central hardware device allocating a resource to receive results of the request at the target node;

10 the central hardware device assigning an identifier to the request;

the requestor sending the results to the target node; and

15 the target node receiving the results directly into the resource without intermediate buffering of the results at the target node.

23. The method of claim 22, wherein said target node is comprised of more than one additional node.